

CLAIMS

What is claimed is:

1. An apparatus for adjusting brightness of a screen on which input RGB color signals are displayed, the apparatus, comprising:
 - a RGB color signal generator to detect a total maximum value of the RGB color signals, to compare the total maximum value with a predetermined critical value, and to generate RGB color signals so as to increase or decrease a brightness level of an image displayed on the screen by one of a plurality of predetermined ratios based on the comparison result; and
 - a system controller to provide the predetermined critical value to the RGB color signal generator.
2. The apparatus of claim 1, wherein the predetermined critical value comprises a first predetermined critical value determined in a case where the brightness level of pixels in an area of the screen from which the total maximum value is detected corresponds to substantially full white, and a second predetermined critical value determined in a case where the brightness level of pixels in the area corresponds to substantially full black.
3. The apparatus of claim 2, wherein if the total maximum value is greater than the first predetermined critical value, the RGB color signal generator decreases the brightness level of the image on the screen by one of the predetermined ratios by generating less bright RGB color signals, and if the total maximum value is less than the second predetermined critical value, the RGB color signal generator increases the brightness level of the image on the screen by another of the predetermined ratios by generating brighter RGB color signals.
4. The apparatus of claim 3, wherein the predetermined ratios are set using data provided from the system controller based on reference data input by a user.
5. The apparatus of claim 1, wherein the RGB color signal generator windows a predetermined area of the screen, and then detects the total maximum value of the RGB color signals in the predetermined area.
6. The apparatus of claim 5, wherein the predetermined area is determined depending on a highest resolution supported by the screen on which the image is displayed.

7. The apparatus of claim 1, wherein the brightness of the screen is automatically adjusted.

8. An apparatus for adjusting a color temperature of a screen on which input RGB color signals are displayed, the apparatus, comprising:

a RGB color signal generator to detect a maximum value of each of a plurality of color signals comprising the RGB color signals, to compare the maximum values, and to generate other RGB color signals, if one of the maximum values is greater than the others, having a color temperature increased to a predetermined value; and

a system controller to provide the RGB color signal generator with the predetermined value and data on conditions necessary for detecting a color signal having the higher maximum value than the other color signals.

9. The apparatus of claim 8, wherein the system controller provides a reference value used in comparing the maximum values and detecting the color signal having the higher maximum value than the others with the data on the conditions, and the reference value is set based on a difference value such that a user perceives a maximum value of the color signal displayed on the screen to be higher than those of the other color signals.

10. The apparatus of claim 8, wherein the RGB color signal generator detects the maximum values of the RGB color signals in each frame.

11. The apparatus of claim 8, wherein the color temperature of the screen is automatically adjusted.

12. An apparatus adjusting brightness and color temperature of a screen on which input RGB color signals are displayed, the apparatus, comprising:

an RGB color signal generator to determine a maximum value of each of a plurality of color signals comprising the RGB color signals and a total maximum value of the input RGB color signals, to compare the total maximum value with a predetermined critical value, to generate other RGB color signals so as to increase and decrease a brightness level of the input RGB color signals based on the comparison result, to compare the maximum values and if one of the maximum values is greater than the others to generate at least one RGB color signal having a color temperature varying by a predetermined value; and

a system controller to provide the RGB color signal generator with data on the predetermined critical value, a reference value used for detecting the color signal having the higher maximum value than the others, and the predetermined value.

13. The apparatus of claim 12, wherein the color temperature of the detected color signal is increased to the predetermined value.

14. The apparatus according to claim 12, wherein the color temperature and the brightness of the screen are automatically adjusted.

15. A method of adjusting brightness of a screen on which input RGB color signals are displayed, comprising:

detecting a total maximum value of the input RGB color signals;

comparing the total maximum value with first and second predetermined critical values;

if the total maximum value is greater than the first predetermined critical value, decreasing a brightness level of an image at a predetermined ratio by generating another RGB color signal having a decreased brightness level; and

if the total maximum value is less than the second predetermined critical value, increasing a brightness level of the image by a predetermined ratio by generating another RGB color signal having an increased brightness level.

16. The method of claim 15, wherein the first predetermined critical value is determined in a case where the brightness level of pixels in an area of the screen from which the total maximum value is detected corresponds to substantially full white, and the second predetermined critical value is determined considering a case where the brightness level of pixels in an area of the screen from which the total maximum value is detected corresponds to substantially full black.

17. The method of claim 15, wherein the total maximum value is detected from a plurality of pixels in an area of the screen determined in consideration of a highest resolution supported by the screen on which the RGB color signals are displayed.

18. The method according to claim 15, wherein the adjusting brightness of the screen is automatic.

19. A method of adjusting a color temperature of a screen on which input RGB color signals are displayed, the method comprising:

detecting maximum values of a plurality of color signals comprising the RGB color signals;

comparing the maximum values so as to detect the color signal having a higher maximum value than the others; and

if one of the maximum values is higher than the others, generating another RGB color signal having a color temperature increased to a predetermined value.

20. The method according to claim 19, wherein the adjusting the color temperature of the screen is automatic.

21. A method of adjusting brightness and a color temperature of a screen on which input RGB color signals are displayed, the method comprising:

detecting and storing maximum values of color signals comprising the input RGB color signals;

detecting and storing a total maximum value of the RGB color signals;

comparing the maximum values to detect the color signal having a higher maximum value than the others;

if one of the maximum values is higher than the others, generating another RGB color signal having a color temperature increased to a predetermined value; and

comparing the total maximum value with a predetermined critical value and generating another RGB color signal, having a brightness increased or decreased based on the comparison result.

22. The method of claim 21, wherein in if the total maximum value is greater than a first predetermined critical value, determined in case where a brightness level of pixels in an area of the screen from which the total maximum value is detected corresponds to substantially full white, then a brightness level of an image is decreased by a predetermined ratio to generate another RGB color signal having decreased brightness, and if the total maximum value is less than a second predetermined critical value, determined in consideration of a case where brightness level of pixels in the area of the screen from which the total maximum value is detected corresponds to substantially full black, then a brightness level of the image is increased by a predetermined ratio to generate a RGB color signal having increased brightness.

23. The method according to claim 22, wherein the adjusting brightness and the color temperature of the screen are automatic.

24. A display adjusting apparatus for a display, comprising;
a first circuit having a first adjustment ability; and

a second circuit having a second adjustment ability;

wherein the first adjustment ability is automatically adjusting a color temperature of the display, and the second adjustment ability is automatically adjusting a brightness of the display.

25. A display adjusting apparatus, as set forth in claim 24, wherein the first circuit and the second circuit each include a RGB color signal generator.

26. A display adjusting apparatus for a display, comprising:

a command applying unit providing a reference brightness level and color temperature value;

a system controller setting a windowing area in the display based on the reference brightness level and color temperature value and determining display adjustment values; and

an RGB color signal generator generating a signal based on the display adjustment values.

27. The display adjusting apparatus as set forth in claim 26, further comprising:

an on-screen display having a menu where the reference brightness level and color temperature value may be set by a user.

28. A method of display adjustment for a display, comprising:

setting a windowing area on the display;

detecting and storing a maximum value of each of a plurality of color signals comprising RGB color signals in the windowing area;

detecting and storing a total maximum value of the plurality of the RGB color signals;

comparing the maximum value of each color signal to detect a first difference value;

comparing the first difference value to a first reference value to generate a first comparison value;

adjusting the display depending on the first comparison value;

comparing the total maximum value to a second reference value to generate a second comparison value; and

adjusting the display depending on the second comparison value.

29. The method of display adjustment, according to claim 28, wherein the

adjusting the display depending on the first comparison value is a brightness level adjustment, and the adjusting the display depending on the second comparison value is a color temperature adjustment.

30. A computer-readable medium encoded with processing instructions for implementing a method of adjusting brightness of a screen on which input RGB color signals are displayed, the method comprising:

detecting a total maximum value of the input RGB color signals;

comparing the total maximum value with first and second predetermined critical values;

if the total maximum value is greater than the first predetermined critical value, decreasing a brightness level of an image at a predetermined ratio by generating another RGB color signal having a decreased brightness level; and

if the total maximum value is less than the second predetermined critical value, increasing the brightness level of the image by a predetermined ratio by generating another RGB color signal having an increased brightness level.

31. The computer-readable medium according to claim 30, wherein the first predetermined critical value is determined in a case where a brightness level of pixels in an area of the screen from which the total maximum value is detected corresponds to substantially full white, and the second predetermined critical value is determined considering a case where the brightness level of pixels in an area of the screen from which the total maximum value is detected corresponds to substantially full black.

32. The computer-readable medium according to claim 30, wherein the total maximum value is detected from a plurality of pixels in an area of the screen determined in consideration of a highest resolution supported by the screen on which the RGB color signals are displayed.

33. A computer-readable medium encoded with processing instructions for implementing a method of adjusting brightness of a screen on which input RGB color signals are displayed, the method comprising:

detecting maximum values of a plurality of color signals comprising the RGB color signals;

comparing the maximum values so as to detect the color signal having a higher maximum value than the others; and

if one of the maximum values is higher than the others, generating another RGB color signal having a color temperature increased to a predetermined value.

34. A computer-readable medium encoded with processing instructions for implementing a method of adjusting brightness of a screen on which input RGB color signals are displayed, the method comprising:

- detecting and storing maximum values of color signals comprising the input RGB color signals;

- detecting and storing a total maximum value of the RGB color signals;

- comparing the maximum values to detect the color signal having a higher maximum value than the others;

- if one of the maximum values is higher than the others, generating another RGB color signal having a color temperature increased to a predetermined value; and

- comparing the total maximum value with a predetermined critical value and generating another RGB color signal, having a brightness increased or decreased based on the comparison result.

35. The computer-readable medium according to claim 34, wherein in if the total maximum value is greater than a first predetermined critical value, determined in case where the brightness level of pixels in an area of the screen from which the total maximum value is detected corresponds to substantially full white, then the brightness level of an image is decreased by a predetermined ratio to generate another RGB color signal having decreased brightness, and if the total maximum value is less than a second predetermined critical value, determined in consideration of a case where the brightness level of pixels in the area of the screen from which the total maximum value is detected corresponds to substantially full black, then a brightness level of the image is increased by a predetermined ratio to generate a RGB color signal having increased brightness.